Notice of Allowability	Application No.	Applicant(s)	
	10/584,199	HODJATI ET AL.	
	Examiner	Art Unit	
	Johnny H. Hoang	3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *12/11/2006*.

2. ☒ The allowed claim(s) is/are *11-20*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 10/02/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with Colin B. Harris (Registration No. 58,969) on August 30, 2007.

The amendment has been changed following:

Claims 18-20 has been rewritten following:

Claim 18: A method for monitoring and/or controlling management of regeneration of a particle filter of a motor vehicle using real-time determination of the mass of particles present in a particle filter installed in an exhaust line of an internal combustion engine, comprising the following sequence of operations repeated at determined time intervals Δt:

(i) at an instant t, measuring the temperature $T(t)$ of the exhaust gases at the inlet of the particle filter using a temperature sensor;

(ii) at the instant t, measuring operating parameters of the engine by sensors;

(iii) at the instant *t*, reading, from pre-established tables, as a function of the operating parameters of the engine, values of the following parameters: oxygen concentration $[O_2(t)]$ and nitrogen oxides concentration $[NO_x(t)]$ of the exhaust gases entering the particle filter, and the rate *F*(t) of emission of particles from the engine;

(iv) at the instant *t*, using the kinetic laws of chemical reactions of combustion of particles, calculating the rate *V(t)* of combustion of the particles in the particle filter by the following parameters: temperature *T(t)*, concentrations $[O_2(t)]$, $[NO_x(t)]$ of oxidizing agents, and mass $m_c(t - \Delta t)$ of particles present in the filter, obtained during the reading (iii) preceding cycle of at the instant $t - \Delta t$;

(v) at the instant *t*, calculating the mass $m_c(t)$ of particles present on the filter, using the mass $m_c(t - \Delta t)$ of particles obtained during the preceding cycle of operations according to the following formula:

$$m_c(t) = m_c(t - \Delta t) + [F(t) - V(t)] * \Delta t,$$

where Δt is the time interval between the instants $t - \Delta t$ and *t*,

(vi) reading the value calculated at the instant *t* for the mass $m_c(t)$ of particles present on the filter so that it can be used in the following sequence of operations at the instant $t + \Delta t$; and

~~monitor~~ monito ring and/or ~~control a method for~~ controlling the management of the regeneration of [[a]] the particle filter of [[a]] the motor vehicle based on the real-time determination of the mass of particles present in the particle filter.

Claim 19: The [[use]] method according to claim 18, in which the determination method is used when the temperature at the inlet of the filter is between approximately 250°C and 500°C.

Claim 20: ~~The use of the determination method according to claim 11~~ A method for managing regeneration of a particle filter of a motor vehicle using real-time determination of the

mass of particles present in a particle filter installed in an exhaust line of an internal combustion engine, comprising the following sequence of operations repeated at determined time intervals Δt:

(i) at an instant t, measuring the temperature $T(t)$ of the exhaust gases at the inlet of the particle filter using a temperature sensor;

(ii) at the instant t, measuring operating parameters of the engine by sensors;

(iii) at the instant t, reading, from pre-established tables, as a function of the operating parameters of the engine, values of the following parameters: oxygen concentration $[O_2(t)]$ and nitrogen oxides concentration $[NO_x(t)]$ of the exhaust gases entering the particle filter, and the rate F(t) of emission of particles from the engine;

(iv) at the instant t, using the kinetic laws of chemical reactions of combustion of particles, calculating the rate $V(t)$ of combustion of the particles in the particle filter by the following parameters: temperature $T(t)$, concentrations $[O_2(t)]$, $[NO_x(t)]$ of oxidizing agents, and mass $m_c(t - \Delta t)$ of particles present in the filter, obtained during the reading (iii) preceding cycle of at the instant $t - \Delta t$;

(v) at the instant t, calculating the mass $m_c(t)$ of particles present on the filter, using the mass $m_c(t - \Delta t)$ of particles obtained during the preceding cycle of operations according to the following formula:

$$m_c(t) = m_c(t - \Delta t) + [F(t) - V(t)] * \Delta t,$$

where Δt is the time interval between the instants $t - \Delta t$ and t,

(vi) reading the value calculated at the instant t for the mass $m_c(t)$ of particles present on the filter so that it can be used in the following sequence of operations at the instant $t + \Delta t$; and

~~in a method for management of the regeneration of a particle filter of a motor vehicle, to~~ determine determining, for each operating point of the engine of [[a]] the vehicle, a threshold

mass of particles, below which the filter will tend to become loaded with particles and above which the rate of combustion of the particles in the filter will tend to increase, based on the real-time determination of the mass of particles present in the particle filter.

Allowable Subject Matter

4. The drawings filed June 23, 2006 accepted by examiner.

5. Claims 11-20 are allowed.

Reasons for Allowance

6. The following is an examiner's statement of reasons for allowance:

The prior art fails to disclose or render obvious the claimed combination including measuring the temperature of the exhaust gases at the inlet of the particle filter using a temperature sensor; measuring operating parameters of the engine by sensors; reading from pre-established tables, as a function of the operating parameters of the engine, values of the following parameters: oxygen concentration and nitrogen oxides concentration of the exhaust gases entering the particle filter, and the rate of emission of particles from the engine; using the kinetic laws of chemical reactions of combustion of particles, calculating the rate $V(t)$ of combustion of the particles in the particle filter; calculating the mass $m_c(t)$ of particles present on the filter, using the mass $m_c(t - \Delta t)$ of particles obtained during the preceding cycle of operations; reading the value calculated at the instant t for the mass $m_c(t)$ of particles present on the filter so that it can be used in the following sequence of operation.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the

issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johnny H. Hoang whose telephone number is (571) 272-4843.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen K. Cronin can be reached on (571) 272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JHH
August 31, 2007

Johnny H. Hoang
Examiner
Art Unit 3747

Willis R. Wolfe
Primary Examiner
A.U. 3747